

Managing For The Most:

A Landowner's Planning and Planting Guide to
Conserving North Dakota's Wildlife Legacy

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NOVEMBER 1990


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Introduction

The objective of wildlife conservation is to retain for all people the opportunity to enjoy, use, and appreciate wildlife. This objective not only includes keeping wild animals from becoming extinct, but also ensuring that the greatest possible variety exists in each community.

Wildlife management, the art and science of wildlife conservation, attempts to make land produce and sustain populations of wildlife so all people may realize its value.



Wildlife in the United States is owned by the public, with primary responsibility for most wildlife conservation programs delegated to governmental agencies such as our state's Game and Fish Department. Although the Game and Fish Department is legally responsible for managing most wildlife on North Dakota public and private lands, a number of federal agencies, private organizations, industrial interests and individual citizens also conduct wildlife conservation activities.

Nearly all funds to conduct these conservation activities are provided by the users of the resource, notably those who hunt and fish. For most state wildlife management agencies, no general tax dollars are used to support their conservation activities.

Wildlife agencies and organizations employ persons with a variety of scientific training and vocational skills. Private citizens also assist these agencies by participating in the political process and their involvement in wildlife conservation organizations.

All these groups would not be able to function effectively if it were not for this country's other wildlife managers; our farmers, ranchers, and landowners. With less than 10 percent of North Dakota in public ownership, it is evident that the state's private landowners play a key role in wildlife conservation.

Landowners managing a certain portion of their land to create new habitats can be of tremendous benefit to wildlife.

We hope the information presented in the following pages will serve as a guide for landowners, both rural and urban, for planning and planting of such areas to help further North Dakota's rich wildlife legacy.

What Makes More Animals?

Wildlife habitat is simply the place or home where wildlife live. Within this habitat, wildlife find the basic needs for survival: food, water, shelter, and living space. It is the ability of the habitat to meet these basic needs that determines what kinds and numbers of animals a piece of land can support. The number of animals this habitat can support at a given time is called its **carrying capacity**.

A habitat's **carrying capacity** may vary by season and year, being greatest in late spring through fall and lowest in winter. A deficit in one of the four basic requirements, regardless of the abundance of the others, will also reduce a habitat's **carrying capacity**.

The key to managing wildlife then becomes a matter of matching the animal's habitat needs with the habitat. Attracting the greatest kinds and numbers of wildlife requires providing variety in food and cover. Citizen conservationists can work to provide

wildlife with food and water, by planting food plots, engaging in wildlife winter feeding operations and the development of wildlife watering areas through the creation or restoration of wetlands.



A habitat's carrying capacity is lowest in winter.

Time To Get Started

Over the course of the next few pages, you will find several additional specific management techniques and suggestions for different habitat types which not only are designed to benefit wildlife, but may also if implemented help a landowner to increased outputs and reduced in soil erosion. The habitat types discussed will include grasslands, woodlands, waterlands, croplands, and the backyard.

If you have any questions about specific practices or your chances of being successful in restoring wildlife habitat for certain species, contact your local wildlife agencies or organizations, Soil Conservation Service or Extension Service representative. They can help you develop a conservation plan for your property that incorporates wildlife habitat needs.



Sandhill cranes.

Managing Croplands For Wildlife

Croplands can be or are beneficial to wildlife. For example, wildlife use waste grain and weed seeds as winter food. Alfalfa crops provide nesting and brooding areas for birds such as waterfowl, pheasant and grouse.

Just how farming affects wildlife depends on the production scheme. All farming changes the height, variety and mix of vegetation as we plow, plant, cultivate and harvest crops. In response to these changes some animals have flourished, but others have been harmed.

Growing the same crop on a large acreage in the same field year after year sharply reduces the variety of plant cover and may eliminate winter cover, nesting areas and food plants. This practice, called monoculture, may also result in diseases and pests having "a field day" at the expense of the producer.

Other agricultural practices such as fall plowing or tillage bury waste grain and other residues that can provide food or cover to help wildlife survive the winter. Stubble left standing reduces accumulations of soil and snow in shelterbelts and marshes which are tradi-

tional wildlife wintering areas. Elimination of fall plowing or tillage increases crop residues and reduces soil loss from wind and water.

Although fall plowing may increase yields over the short term, yields will eventually benefit under spring tillage management because of soil and water savings. However, once a field is tilled, wildlife loses nearly all the benefits of cropland.

Specific agricultural practices benefiting both wildlife and the producers are: land set-aside or retirement programs, minimum and no-till cultivation crop rotations, cover and green manure crops, contour and stripcropping, grass waterways, terraces, field windbreaks, "odd area" maintenance, and field border management.

Each of these practices will reduce wind and water erosion, maintain soil fertility and productivity, and prevent pesticide runoff to waterways. Many of these practices are eligible for cost-sharing through federal farm programs as administered by the Agricultural Stabilization and Conservation Service (ASCS). Additional help both financial and technical, is available through a number of other public and private programs.



Stubble mulching conserves valuable residues and reduces losses of upland nesting birds and their nests.

Land retirement or set-aside opportunities

The U.S. Department of Agriculture offers a variety of programs to encourage farmers to set aside or idle portions of their land. The most recent of these is the Conservation Reserve Program (CRP), designed to remove marginal lands from crop production and return them to some type of permanent grass cover.

Conservation tillage, minimum or no-till

Reducing cropland tillage destroys fewer nests and remaining crop residues provide food and cover for animals feeding in the field. Recent studies from no-till winter wheat fields in North Dakota indicate they support a greater number and variety of nesting birds than clean tilled fields.

Cover and hay crops

Alfalfa, clover and grass in a cropping system provide forage and hay, reduce soil erosion, add organic matter to the soil, and also provide nesting and brood rearing areas for birds. However, annual haying usually coincides with peak nestings, and haying may destroy many nests.

To reduce haying impacts on wildlife, consider starting in the center of the field, then working toward the perimeter. By doing so, broods contained within the field will have a better chance to escape. Effects of mowing on wildlife can also be reduced by leaving a 20 to 30 foot field border. A majority of nesting hens tend to nest within 50 feet of the field perimeter.

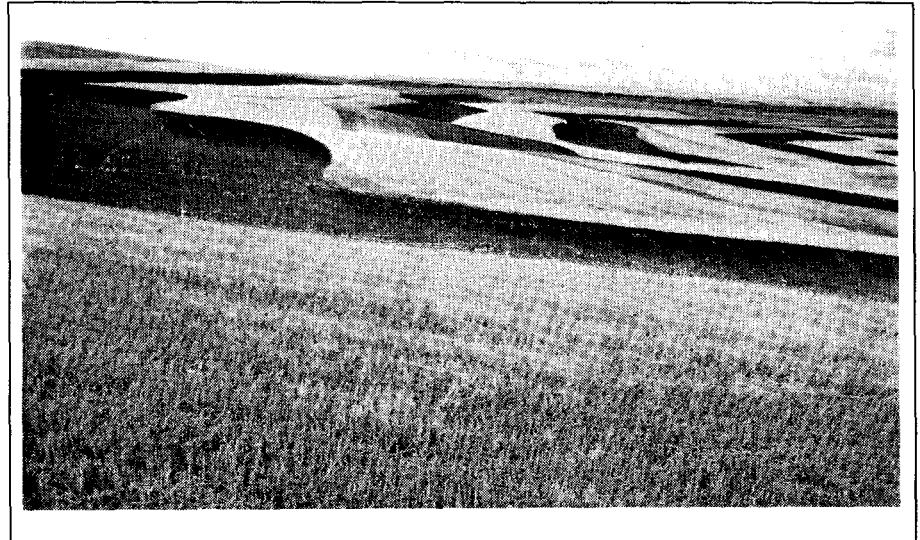
Reducing mowing speeds to under 3 mph as well as delaying first crop cutting until early July will also decrease haying mortality of nesting birds and young. However, by delaying mowing of alfalfa past the 10 percent bud stage, the protein quality of the forage will decrease. (Note - there currently is a federal wildlife program that may compensate landowners for delaying haying to benefit waterfowl production.)

Contour and stripcropping

Strips of row crops alternated with soil conserving strips of small grains or cover crops planted on contours attract more ground-nesting birds than undivided fields. Contoured and stripcropped fields create more "edge" where more food and cover are available.

A large field has a smaller percentage of borders and edge than that of

several smaller fields. For example, a single quarter section field will have only two miles of edge. If the same field was divided into four smaller 40-acre-square fields, it would have three miles of borders or edges. But, by dividing it into four forty-acre strips, it will yield 3.5 miles of edge. By increasing the edge and using a different crop in each small field, an operator could dramatically increase wildlife numbers on the land.



Contoured field with crop residue use and odd areas increase the attractiveness of croplands for wildlife.



Contour strip cropping from foreground: crested wheatgrass and native grass, strips of alfalfa alternating with corn and wheat. Odd areas are seeded to tame grasses and alfalfa. In background, field stripcropping and stockwater pond on range. Several federal and state programs can provide the financial and technical incentives to implement conservation practices that benefit both landowner and wildlife.

Crop rotations

Almost every crop in North Dakota has some value to wildlife, depending on the season and availability of other suitable habitats. Unharvested blocks of small grains and row crops such as corn, sunflowers, grain sorghums, and soybeans adequately spaced across the field, adjacent to fence rows, shrubby cover, or wetlands reduce drifting and provide supplemental food during periods of heavy snow. Blocks of unharvested crops are better than a few rows or narrow strips because they are less likely to be flattened by wind or choked with snow.

Wildlife food plots can also be incorporated into crop rotations. Food plots should be block plantings of at least two acres per quarter section (160 acres). The plots should be planted on the east or south side of native woodlands, multiple-row tree belts, wetlands or other wildlife cover. Square plots are best in most cases since they are not as easily filled with snow as are long narrow plots.

Crops which are readily used by wildlife are corn, sunflowers, grain sorghums, wheat, barley, millets, buckwheat, oats, rye, flax and clovers. It is best to seed food plots with a combination of crops ensuring that food will be available at different heights for a variety of wildlife species.

Rotating crops can reduce or prevent a long-term buildup of certain pests, reducing costs for chemical pesticide applications.

Grass Waterways and Terraces

Grass waterways and terraces reduce water erosion on sloping cropland by intercepting runoff and carrying it slowly off the field. The value of waterways to wildlife depends on the grasses and legumes selected. Similarly, the value of terraces depends on whether

the terrace slopes are cropped. Narrow base terraces planted to permanent cover can provide nesting and feeding areas for wildlife if the proper plants are selected. For a guide to woody, grass and legume plantings that benefit wildlife, refer to the tips included in the supplement sections on woodlands and grasslands.



Terraces constructed as part of a RC&D roadside erosion control project reduce runoff, conserve moisture and provide water areas for wildlife.



Terraces.

Field Windbreaks

Windbreaks of trees and shrubs reduce wind erosion, trap blowing snow, conserve moisture, protect crops and livestock, and may provide food and cover for many kinds of wildlife. Select plants adapted to the site that also provide wildlife foods or cover. A list of suitable trees and shrubs for windbreak plantings can be found in the woodland section of this supplement.

Field Borders

Probably the most beneficial areas to wildlife on grain-producing farms are field borders. Such borders are often found on the sloping ends of contoured or stripcropped fields. When seeded with grass and legume mixtures, these areas control erosion, reduce competition from adjacent woodland and provide travel lanes for not only farm machinery, but wildlife. Wildlife will also use these borders for nesting, brood rearing and protection from predators and the weather.

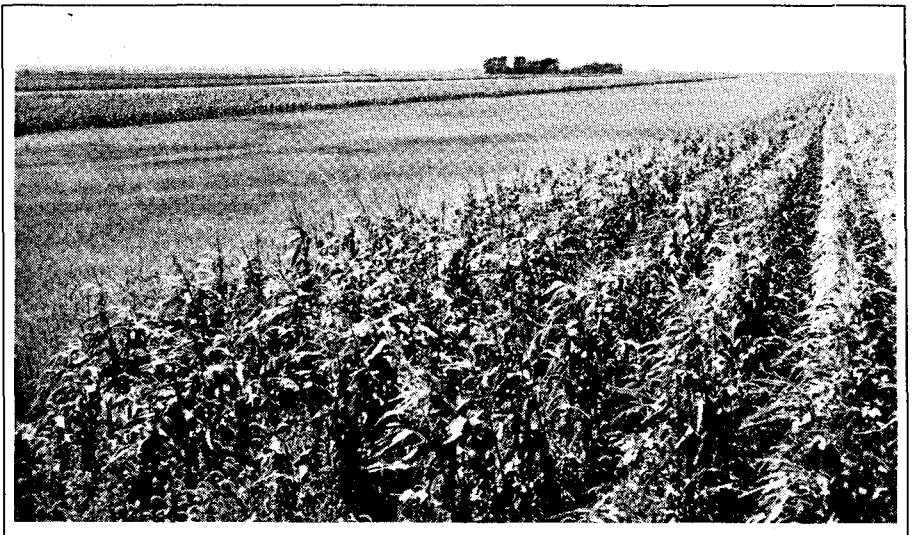
A field border made up only of a fence line will attract few wild animals, whereas if that same land has a few weeds giving it a 1 or 2-foot width, wildlife use will increase dramatically. In general, the wider the border, the greater the benefit to wildlife.

Borders from 20 to 100 feet, depending on the plants found there, are useful as travel lanes, but also provide nesting, brood rearing, roosting and escape areas.

Field borders that contain mixtures of native and introduced grass, legumes, annual and perennial weeds, shrubs and trees will be used more by wildlife than areas seeded only with, for example, brome grass.

Odd Areas

Odd areas on farms and ranches are places that are not cropped. They include fence corners, abandoned roads and road ditches, rocky spots, abandoned farmsteads, highly erodible areas and other parcels that may be isolated by roads, ditches or streams. Due to site limitations, many of these areas are unsuitable for cultivation, but they can still be valuable to wildlife. By pre-



Wind strip crop of corn - small grains. Farmstead and field windbreak shown in the back of the photo. Such areas increase wildlife habitat edges.



Farmstead windbreak showing excellent protection. These windbreaks also provide excellent winter habitat for wildlife.

serving the natural vegetation of these areas and establishing additional food and cover, odd areas can supply wildlife with those basic needs that may be lacking in adjacent cropland. These areas also make excellent sites for erecting nest boxes.

In managing odd areas to obtain the greatest wildlife benefits, delay grazing

or mowing of such areas until late July, and if some noxious weeds are present, use spot applications of herbicides when necessary. Cropland acres are too valuable to be overlooked as wildlife habitat. The techniques identified in this section can be implemented with little or no impact on agricultural profits.

Managing Water For Wildlife

Water is a basic requirement of life. For this reason rivers, streams, lakes, and wetlands have been hubs of both human and animal activities since time began.

With proper management, such areas will continue to yield substantial benefits to all creatures that depend upon them.

The intent of this section is to offer some water management ideas that may be beneficial to both landowner and wildlife. This section will deal specifi-

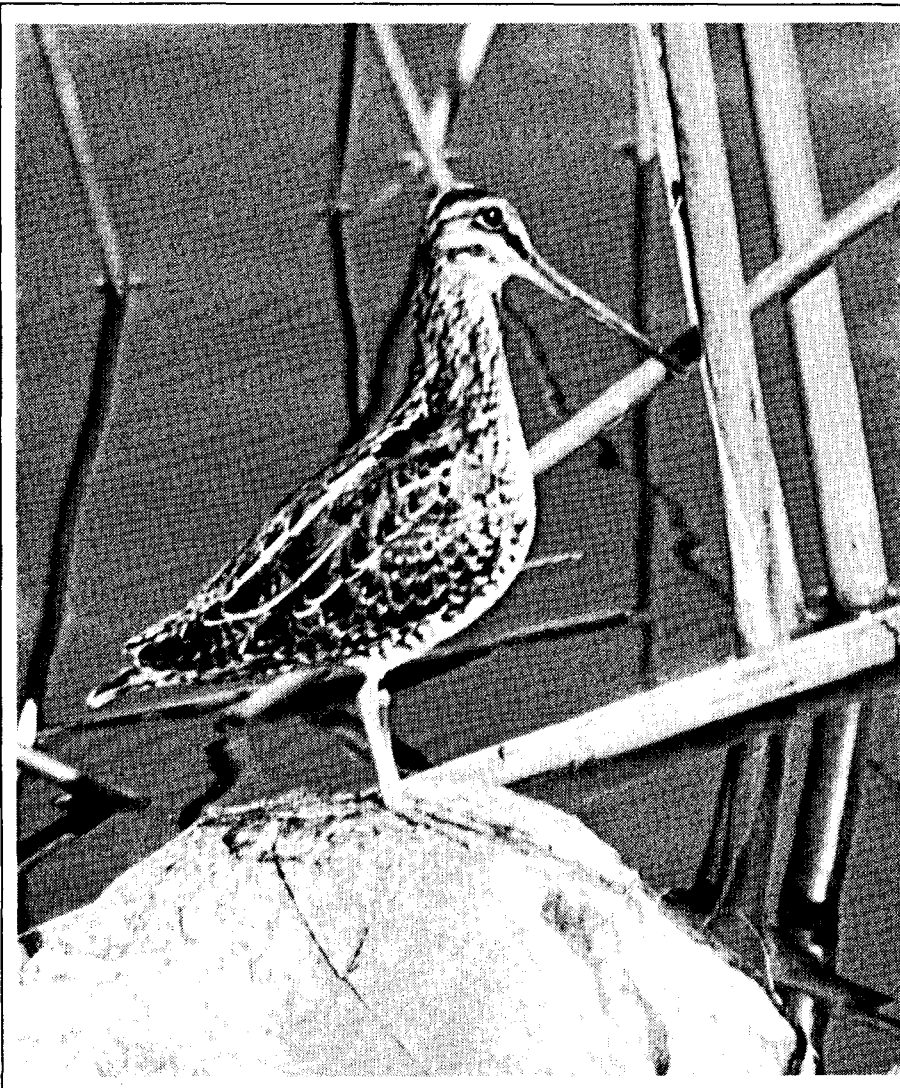
cally with the development and management of farm ponds and streams on private lands.

Farm Ponds and Streams

Although many farm ponds are established primarily for watering livestock, they can also function as valuable wildlife habitat if certain guidelines are followed in construction and management.

Farm ponds developed with a gradual slope provide habitat for emergent plants like cattails. This vegetation in turn provides cover and food for a number of wildlife species. If cattle are fenced to only allow access to a portion of the shoreline, the vegetative response will attract wildlife. Seeding grass around the pond, in addition to creating habitat, will control runoff water entering the pond, reducing silting and turbidity, making the pond more suitable for aquatic life.

Farm ponds also benefit nongame wildlife such as this Wilson's snipe.



To preserve water quality in farm ponds, lakes, streams and rivers, it is a good idea to plant crops at least 30 feet from the edge of the vegetation along the water area. This distance minimizes the impact of agricultural runoff on the water quality. Leaving a vegetational edge around wetlands can also reduce the risk of saline soils developing, which occurs frequently when wetlands are cultivated too close to the edge.

Role of wetlands

Wetlands are vital components of the habitat needs of migrating waterfowl and wetlands of all sizes are important to waterfowl. Large, small, shallow, and deep wetlands are all important to the different life cycles of prairie waterfowl.

Wetlands also can provide substantial flood control, groundwater recharge water quality and livestock forage benefits.

Wetlands restoration opportunities

With the advent of the Conservation Reserve Program (CRP), opportunities presently exist for developing wetland habitats for wildlife.

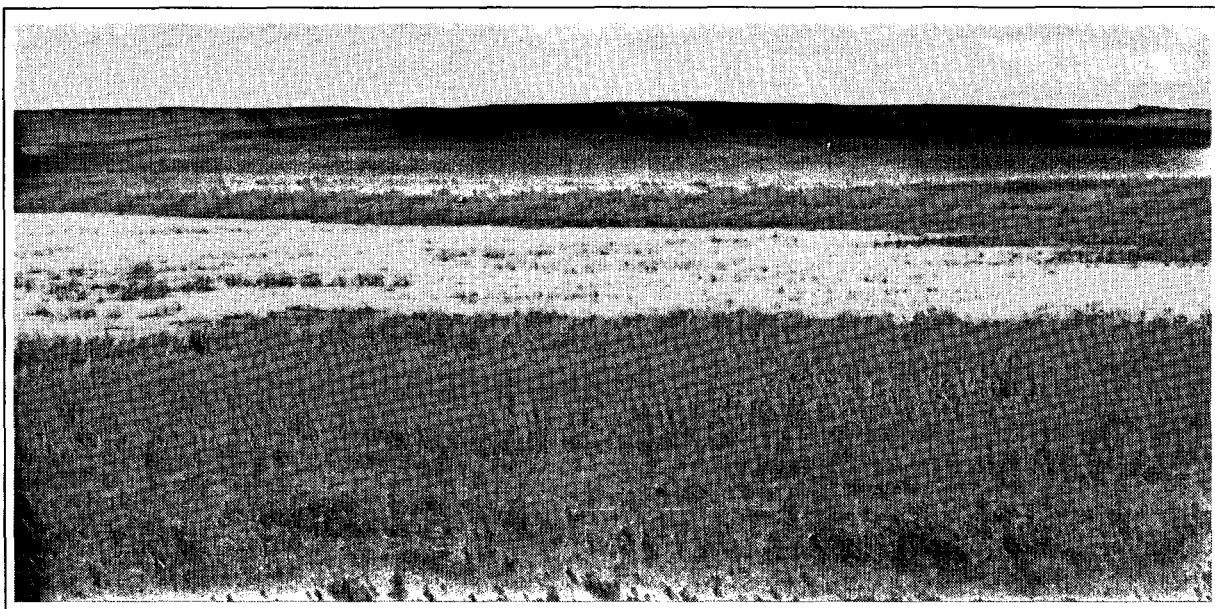
Lands that qualify for the CRP program must be seeded or returned to some type of permanent cover. Under CRP guidelines water is acceptable as a permanent cover. Thus, if drained wetlands exist on enrolled CRP acres, they can be restored. And, as with other CRP practices, the cost of restoring a wetland is shared between the landowner and ASCS.

Additional state and federal programs are also operating to pick up the landowner's cost of the wetland restoration. Landowners who restore or develop wetlands under CRP may not have to bear any expense of the restoration activities. Sports-men and wildlife clubs have also assisted in wetland restoration by paying for the associated costs.

In addition to the cost sharing program available for wetland restoration, similar types of programs are available to assist landowners in developing wetland areas for wildlife.

In order to maximize the wildlife benefits of restored or developed wetland areas, the surrounding uplands should be seeded to suitable upland cover. This cover in addition to providing secure nesting habitat will also minimize soil erosion from adjacent croplands into wetlands. To further enhance these areas, consider constructing earthen islands or using elevated nesting structure to attract waterfowl and geese.

For more information on restoring or creating water areas for wildlife, contact your local wildlife agency or Soil Conservation Agency representative.



Prairie wetlands provide a multitude of benefits.

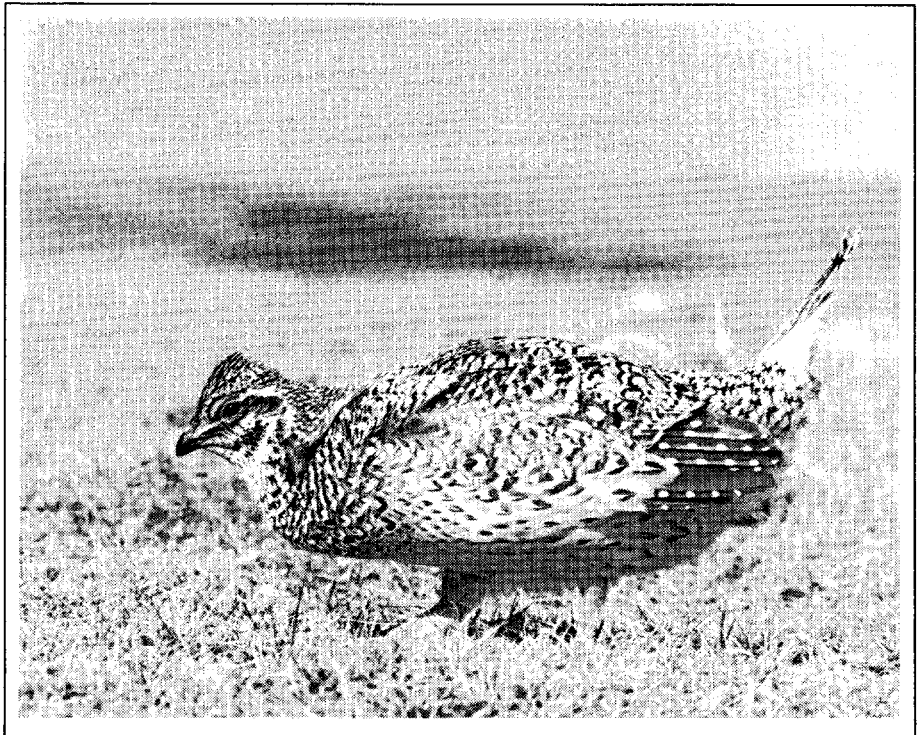
Managing Grasslands For Wildlife

Rangelands by definition include grasslands, shrublands and open forests. Aside from the obvious uses of rangeland for grazing livestock, these areas also function as haylands and valuable wildlife habitat while cleaning our water and enriching our soil. No matter what the grass management objective, there are a number of tools currently available, designed with a knowledge of plant responses in mind, that can help a producer achieve desired results. Properly managed rangelands sustain productivity, provide economic returns and supply a host of wildlife benefits.

With the advent of the Conservation Reserve Program, millions of acres of marginal cropland have been returned to grasslands. This massive conversion creates a need for increased awareness of the management tools available to use this new resource to obtain benefits for the producer and wildlife alike.

Fire

Landowners maintain the cover they have established as part of their CRP contract. For more specific information on the use of fire and assistance in developing a plan, contact one of the public management agencies listed at the end of this supplement.



Proper grassland management can yield significant benefits to grassland birds such as this sharptailed grouse.

Haying

Haying native or prairie grasslands can be either detrimental or beneficial to wildlife depending on the practices followed. Haying removes above-ground plant materials and reduces soil fertility when compared with grazing, where most materials are returned as manure.

When haying is used as a management option on native rangeland, it should occur after July 1 and be completed before July 15. Mowing that occurs later in the growing season over a period of years alters the vigor and

composition of native grass. Plant food resources are lowered by late summer mowing since any plant regrowth that occurs must draw on the plant's energy reserves.

The reduction of plant energy reserves affects the plant's production potential for next year's growth. In most cases there is not enough time to manufacture and store additional food reserves before frost kills the above-ground food-producing green leaves. Prairies with lowered growth potentials are easy targets for weed invasion.

Mid-summer haying allows ground-nesting birds such as pheasant, grouse, etc., to complete nesting undisturbed. The regrowth that may follow mid-summer haying also provides important food and cover for many forms of wildlife which depend on grassland habitats.

Grazing

Grazing management on rangelands is a tool for maintaining or achieving the kind of vegetation necessary to obtain the desired livestock and wildlife production. Grazing management requires controlling the number of animals, selecting the right animal mix, ensuring proper distribution, and managing seasonal timing use.

When considering animal numbers or grazing pressure, the concept of "taking half and leaving half" is an index to follow. Generally a grass plant will produce about twice the quantity of leaves it needs to complete its growth. If more than half a plant is taken, it may affect plant root development. Studies have revealed when 60 percent of a plants' leaves are removed, approximately 50 percent of the roots cease to grow. Achieving proper utilization of grass species will ensure that sufficient cover will also be available for wildlife such as deer, which have different food habits than cattle.

Proper utilization of forage will also leave greater amounts of cover available to ground nesting birds. Proper utilization of rangeland plant species requires a producer or land manager to identify current condition of the area,

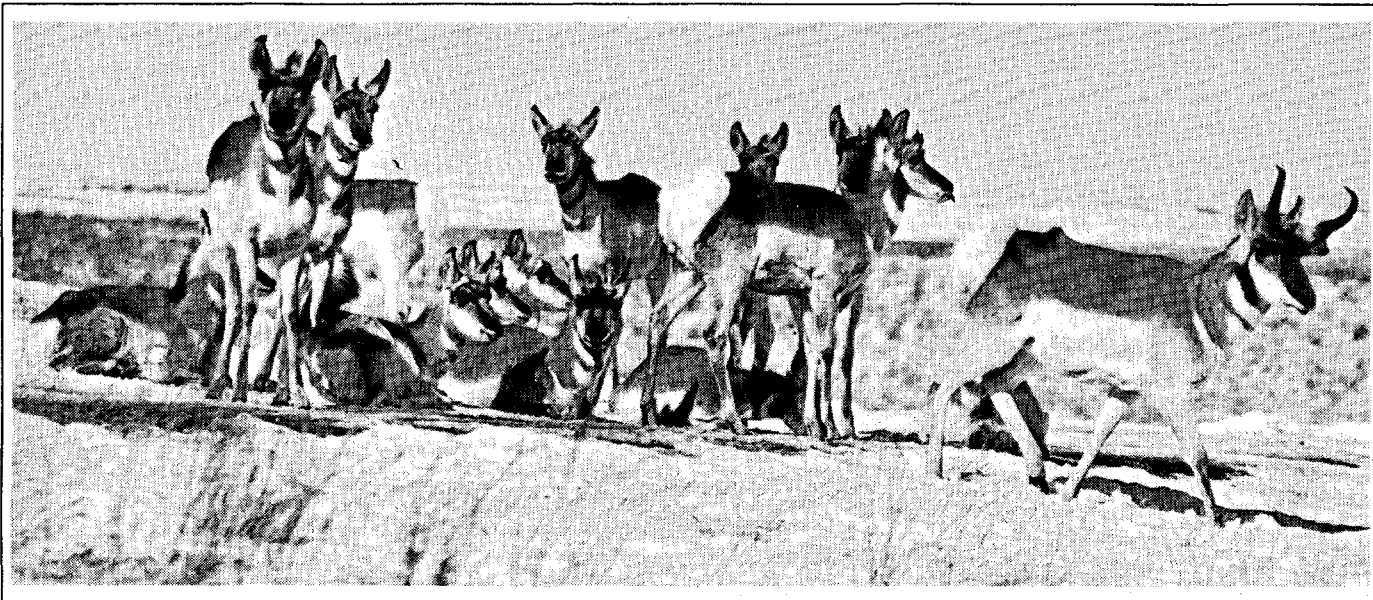
and the rangeland management objectives. This information will allow for the development of a grazing plan or selection of a grazing system to achieve the desired results.

Examples of such plans or systems are rest-rotation grazing, deferred grazing, short duration grazing and twice-over deferred rotation grazing. Grazing systems greatest benefit to wildlife are those that leave adequate cover for nesting and brood rearing during the critical nesting season (April 1 - June 30).

A system that shows tremendous promise for wildlife and the producer in the prairie pothole region is the twice-over deferred rotation system. Under this system, a larger pasture is divided into three or four smaller pastures. Cattle are allowed to graze each pasture for 20-28 days, beginning about June 1,



Rangelands are important habitat for mule deer.



Winter survival of antelope depends on having rangelands in good condition.

and are rotated through each pasture twice during the grazing season, giving the producer 156-160 days of on-grass time.

Initial studies conducted on this system indicate that it is producing significantly more beef and wildlife than adjacent areas where cattle are allowed to graze freely.

Planting Grasslands for Wildlife Habitat

Lands qualified for the Conservation Reserve Program (CRP) may be developed for wildlife, with the cost of development shared by the administering agency (ASCS). A big part of creating new wildlife habitat is establishment and maintenance of healthy stands of seeded grasslands.

The best grass stands result when certain guidelines are followed. These include: selecting the best type of seed mix, use of only good quality adapted seeds, a firm seed bed, proper seed depth, time of seeding, and adequate weed control. If you use a nurse crop, clip and remove it during early growth stages.

Determining the Right Seed Mixture

Seed mixtures are available for establishing several kinds of grassland. The general categories of grasses are native and introduced.

Native grass, although more difficult to establish and usually more expensive, can be maintained in a vigorous condition longer without the need for constant rejuvenation. Some varieties of tall native grass (3-6 feet) are big bluestem, Indiangrass and switchgrass. Seeding a mixture of these grasses will produce a tall, dense stand attractive to deer, nesting waterfowl and other game birds. These grasses do well on low-land areas with good moisture.

Some examples of mid-height native grasses (2-3 feet) that provide wildlife habitat are western wheatgrass, green needle-grass, sideoats grama and little bluestem. These hardy, drought resistant grasses are well adapted to many areas.

Planting a mixture of introduced grasses and legumes can also produce stands of tall, dense cover. Grasses and legumes that can be included in such a mixture are tall wheatgrass, intermediate wheatgrass, alfalfa, and/or sweet clover. All of these do well on previously cultivated soils, and this cover supplies excellent soil building proper-

ties by including alfalfa and sweet clover in the mixture.

No matter what seed mixtures you select, the success of your planting ultimately depends on soil type, slope, moisture, site preparation, planting techniques, rates and dates of seeding and stand maintenance. Here are some points to remember:

- 1) Wait for adequate moisture before planting grass and legumes. A simple way to determine if the moisture content is adequate is to form topsoil into a ball with your hands. If the ball holds its shape, start your engines.
- 2) Make sure the seedbed is free of weeds. Weed presence is the number-one reason why plantings fail.
- 3) Soils should be packed firmly enough so that when a person walks across the seed bed his foot does not sink into the soil.
- 4) Controlling weeds after the seeded grasses have emerged is just as important as insuring that the seed bed is free of weeds prior to planting. Weeds can be controlled by applying appropriate herbicides once the grass seedlings have reached 10 inches in height, or by clipping to a height of 6-8 inches.

How to determine type of seed mix best suited for your needs

Seed Mix	Site	Soil	Species	Cost Estimate
grass/legume	all sites suitable to farming	most soils well-drained	tall wheatgrass inter. wheatgrass alfalfa	lowest
tall native grass	lowlands, bottomlands nearly level plains	deep, fine, well-drained to moderately drained	big bluestem Indiangrass switchgrass	highest
mid-height native grass	uplands, rolling plains with moderate to steep slopes	moderately deep, medium-textured, well-drained	greenneedle western wheatgrass side-oats grama	mid

(From "Planting Grasslands for Wildlife Habitat" by Mavis I. Meyer. Copies available through your county extension office or by writing Northern Prairie Wildlife Research Center, P.O. Box 2096, Jamestown, ND.)

Recommended Rates and Dates of Seeding

Grass	Pure stand lb/acre	Mixed stand lb/acre	Dates
Introduced Grasses and Legumes			
Tall wheatgrass	11	4.5	before May 15
Intermediate wheatgrass	10	4	or
Alfalfa	4	1	between Aug.10
Sweetclover	3	0.5	and Sept. 20
Tall Native Grasses			
Big bluestem	11	5	between June 1
Indiangrass	10	3	and June 15
Switchgrass	5	1	
Mid-height Native Grasses			
Green needlegrass	10	4	before May 15
Western wheatgrass	12	4	
Sideoats grams	9	3	
Little bluestem	6.7	1	

(From "Planting Grasslands for Wildlife Habitat" by Mavis I. Meyer.)

Managing Woodlands for Wildlife

Almost any tree or shrub will benefit wildlife, but some trees and shrubs and certain types of tree plantings are more beneficial than others. Guidelines have been developed by specialists to assist landowners and land managers in planning and planting trees for the greatest benefit to the widest variety of wildlife. In addition, a number of public and private agencies provide financial assistance to establish, and rejuvenate tree plantings.

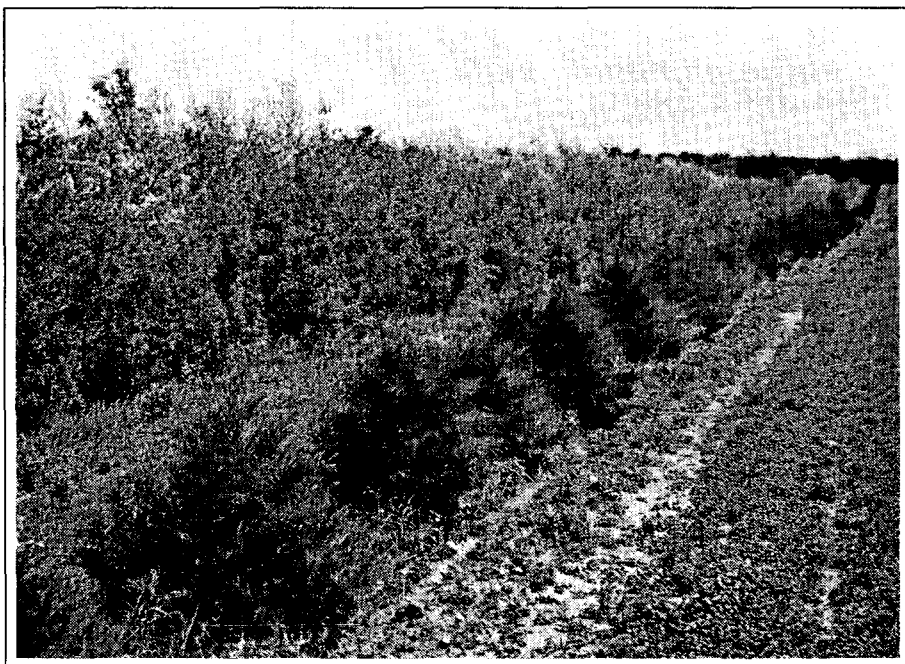
Increased wildlife benefit can be achieved in most tree plantings by simply adding more fruiting trees, shrubs, and evergreens, particularly junipers and cedars. The fruiting trees offer wildlife food while the evergreens offer secure roosting sites during severe winter storms. Plantings of at least one acre provide the greatest benefit to wildlife. There are several types of plantings to consider.

Shelterbelts or Windbreaks

Wide shelterbelts are better than narrow ones. Height is not as important as ground cover. A shelterbelt that is bare underneath usually does not attract much wildlife. The preferred understory is a heavy herbaceous or grassy layer. A well developed shrub row adjacent to the herbaceous understory tends to increase bird diversity.

An ideal planting for wildlife has several rows in a stair-step effect. Dense shrubs planted on the outside prevent snow from piling in the center of the belt where wildlife seek protection. Deciduous trees should occupy the center, then cedar and pine where birds and mammals can seek shelter during severe winter weather.

If a single row is planted, cedar is an excellent choice. The two to five rows more common in newer windbreak plantings usually contain at least two rows of cedar with additional rows of pine, deciduous trees and/or shrubs.



This eight year old wildlife tree planting (tall trees in center) provides food and shelter for birds and small animals. The area is also heavily used by deer.

Travel Lane

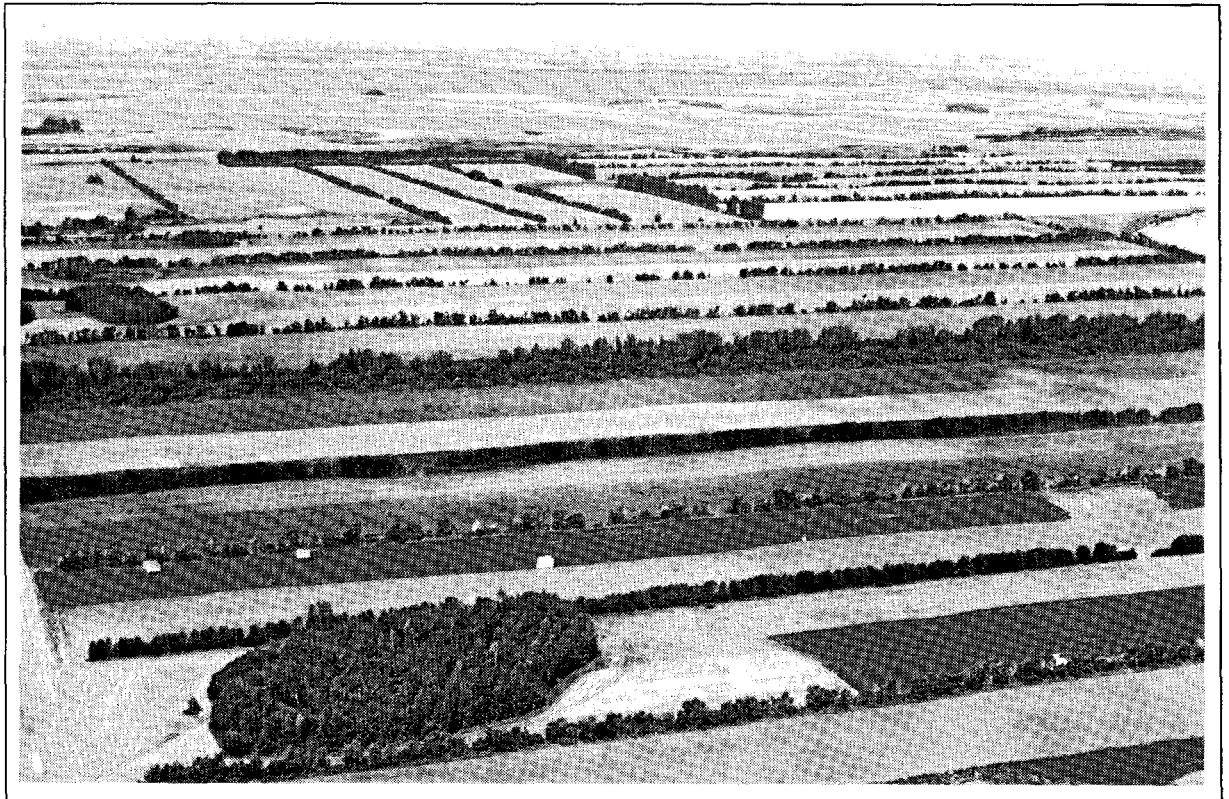
Wildlife need to move under cover to seek food, water, or a different cover type. Travel lanes can provide food and protection for grouse, pheasants, partridge, and many other species. Even a single conifer row provides some protection.

Block Planting

Center pivot irrigation leaves many field corners that could be planted to trees. Block plantings can be used there and in other odd areas and poor soil sites to check soil erosion and stabilize blow outs.

Plant larger trees in the center and then progressively shorter plants toward the sides. This supports the greatest number and variety of wildlife. Fruit-bearing shrubs make ideal winter food and cover for wildlife.

In summary, trees and shrubs planted in blocks and rows, or in combination with rangelands and croplands, work for man and wildlife year-round. Such plantings hold snow, reduce summer moisture loss, reduce wind erosion and provide food and cover for domestic and wild animals.



Trees planted in wind breaks and shelterbelt fashion can create new woodlands, benefitting all species who dwell there.

What to Plant

Deciduous Trees

Species	Growth Requirements	Height	Planting Use
Amur Maple	Most sites	15-20 ft	Urban, belts, odd areas
Crab Apple	Most sites, sun to partial shade	15-25 ft	Urban, odd areas, belts
Hawthorne	Moist to dry, sun to shade	10-15 ft	Urban, belts, odd areas, thickets
Laurel Willow	Moist sites, sun	15-20 ft	Urban, belts, thickets
Russian Olive	Well-drained to dry soil, sun	15-25 ft	Urban, odd areas, belts
Green Ash	Moist sites	25-50 ft	Urban, belts, odd areas
Hackberry	Most sites	30-60 ft	Urban, belts, odd areas
Bur Oak	Most sites	Up to 50 ft	Urban, belts
Norway Poplar	Most sites	Up to 70 ft	Urban, belts
Golden Willow	Moist sites	25-50 ft	Urban, belts, odd areas
White Willow	Moist sites	25-50 ft	Belts, odd areas
Robusta Poplar	Moist sites	Up to 70 ft	Urban, belts
Cottonwood	Moist sites, lowlands	50 ft +	Urban, belts, odd areas, thickets
Boxelder	Most sites	25-50 ft	Belts, odd areas
Siberian Elm	Most sites	25-50 ft	Belts, odd areas
Basswood	Most sites	Up to 60 ft	Urban, belts, odd areas
Mountain Ash	Moist to dry soil, cool climate	20-35 ft	Urban
Paper Birch	Cool soil	40 ft	Urban
Russian Mulberry	Moist sites	25-40 ft	Urban
Black Cherry	Most sites	10-20 ft	Urban, odd areas

Coniferous Trees

Species	Growth Requirements	Height	Planting Use
Colorado Blue Spruce	Most sites	Up to 60 ft	Urban, belts, odd areas
Black Hills Spruce	Most sites	Up to 50 ft	Urban, belts, odd sites
Eastern Red Cedar	Most sites, sunny	25-40 ft	Belts, odd areas
Rocky Mountain Juniper	Dry, sunny	25-40 ft	Urban, belts, odd areas
Ponderosa Pine	Dry	25-50 ft	Urban, belts, odd areas
Scotch Pine	Most sites	25-50 ft	Urban, belts, odd areas

Vines

Species	Growth Requirements	Height	Planting Use
American Bittersweet	Well-drained to dry soil, sun to shade	Climbs to 25 ft	Urban
Wild Grape	Most sites, sun to partial shade	Climbs to 25 ft	Urban
Virginia Creeper	Most sites, sun to partial shade	Climbs to 25 ft	Urban

Small Trees and Shrubs

Species	Growth Requirements	Height	Planting Use
Caragana	Most sites	8-12 ft	Belts, odd areas, travel lanes
Lilac	Most sites	10-15 ft	Urban, belts, odd areas, thickets
Buffaloberry	Dry	10-15 ft	Belts, odd areas, thickets
Cotoneaster	Most sites, sun to partial shade	5-10 ft	Urban, belts, odd areas
Dogwood	Moist to well-drained	6-12 ft	Belts, odd areas
Currant and Gooseberries	Most sites, partial shade to shade	3-5 ft	Urban, belts, odd areas
Woods Rose	Most sites	4-6 ft	Urban, belts, thickets, odd areas
Nanking Cherry	Most sites	5-8 ft	Urban, belts, odd areas
Juneberries and Serviceberries	Moist sites, shade	8-12 ft	Belts, odd areas, thickets
Chokecherry	Most sites	10-15 ft	Thickets, belts, odd areas
Plum	Most sites	8 ft +	Belts, thickets, odd areas
Coralberry	Most sites	3 ft	Urban
American Highbush Cranberry	Moist to well-drained, sun to light shade	8-12 ft	Urban, odd areas
Smooth Sumac	Most sites	8-12 ft (shrub)	Urban, belts, thickets, odd areas
Raspberries	Most sites, partial shade to shade	3-5 ft	Urban
Rugosa Roses	Most sites	3-6 ft	Urban, belts, odd areas

Managing the Backyard for Wildlife

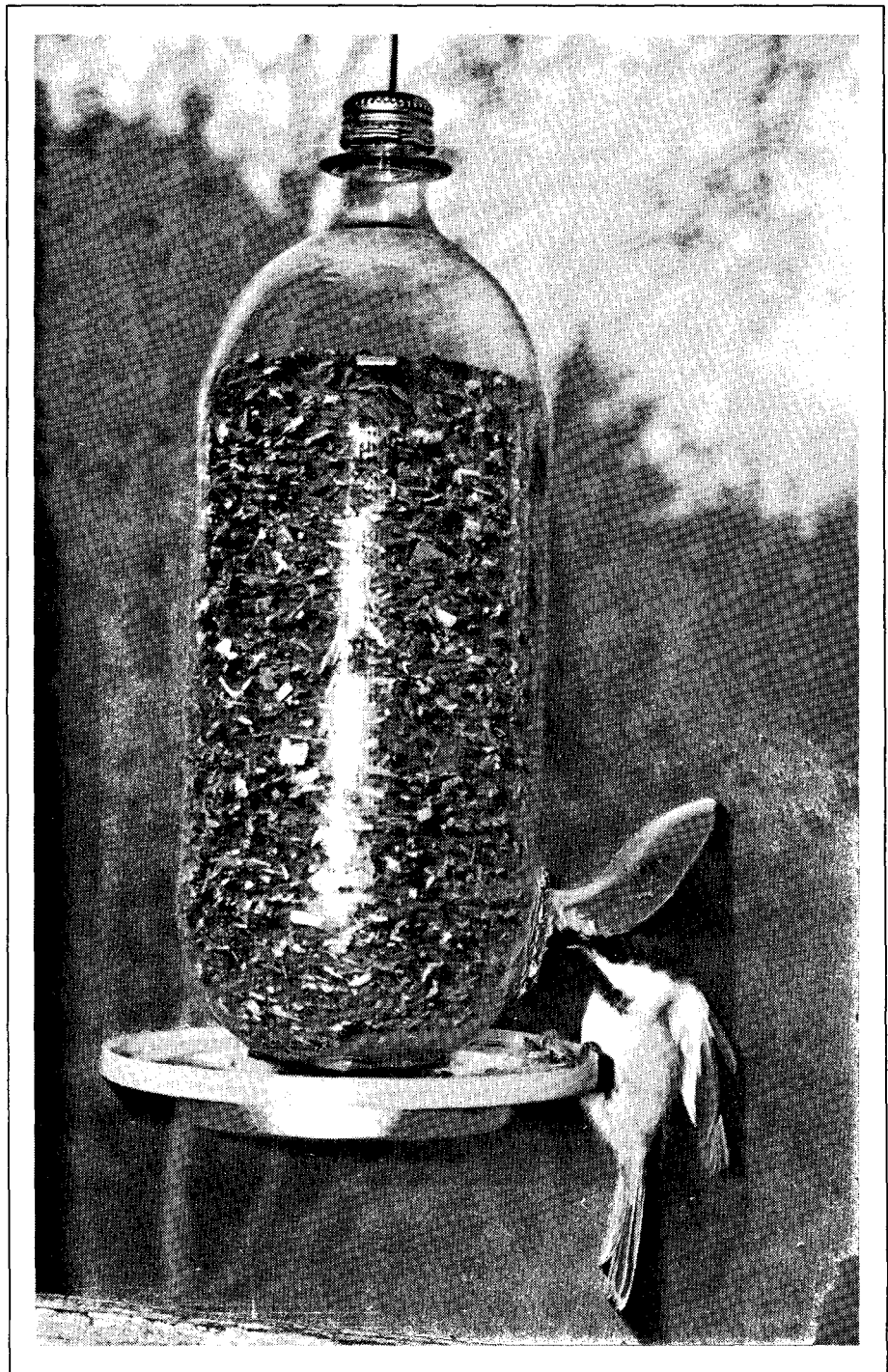
By providing food and cover in your backyard, you can bring wildlife close to you. Following are some simple suggestions on how to make your backyard attractive to wildlife.

Feeding

Feeding is probably the simplest way to attract wildlife. Generally most feeding is done in the winter months when natural foods are unavailable. The simplest type of feeders to dispense a mixture of oil-type sunflower seeds (50 percent), white proso millet (35 percent) and finely cracked corn (15 percent) will attract a wide range of backyard songbirds. More specific information on feeding birds is available through your county extension offices.

Nest Boxes

Building and placing nest boxes or shelves in your backyard can also greatly increase the numbers and kinds of wildlife you attract. Wood is the best material to use and galvanized nails should be used to fasten the pieces of a nest box or shelf together.



Black-capped chickadee feeding from a homemade feeder.

Guidelines for Building Nest Boxes

Species	Floor of Cavity (in.)	Depth of Cavity (in.)	Entrance Above Floor (in.)	Diameter of Entrance (in.)	Height Above Ground (feet)	Habitat Code	Likelihood of Attracting
House Wren	4 x 4	6-8	4-6	1 - 1 1/4	4-10	2,6	Excellent
Chickadees	4 x 4	9	7	1 - 1 1/8	4-15	2	Good
Downy							
Woodpecker	4 x 4	9	7	1 - 1 1/4	5-15	2	Good
Bluebirds	5 x 5	8-12	6-10	1 1/2	5-10	1	Fair
				be exact			
Red Headed Woodpecker	6 x 6	12	9	2	10-20	2	Fair
Flicker	7 x 7	16-18	14-16	2 1/2	6-30	1,2	Good
Screech Owl	8 x 8	12-15	9-12	3	10-30	2	Good
American							
Kestral	8 x 8	12-15	9-12	3	10-30	1,4	Good
Barn Owl	10x18	15-18	0-4	6	12-18	4	Good
Wood duck	12x12	22	17	4	10-20	3,5	Good
Purple Martin	6 x 6	6	1	2 1/2	10-20	1	Good
Barn Swallow	6 x 6	6	*	*	8-12	6,7	Excellent
Robin	6 x 6	8	*	*	6-15	6	Excellent

*One or more sides of house should be left open

Habitat Codes:

1. Open Areas not permanently shaded, such as pastures, fields, golf courses.
2. Woodland clearings or the edge of woods.
3. Above water, or if on land, entrance should face water.
4. On trunks of large trees or high in little-frequented parts of barns, silos, water towers or church steeples.
5. Moist forest bottom lands, flooded river valleys, swamps.
6. Backyards, near buildings.
7. Near water; under bridges

Water

A small pool can add to the attractiveness and enjoyment of some backyards, especially larger ones. Birds will make the pool a center of activity, and some pools can provide a home for turtles, damselflies (mosquito-eaters), or frogs - an extra sparkle for many outdoor observers. Small fiberglass or plastic pools can be purchased, or a pool can be dug and lined with concrete or plastic sheeting.

Plantings

Plants are perhaps the most important part of a backyard habitat because they become the environment for the family as well as for songbirds. Plants add beauty and comfort to the home and often increase property value. Trees and shrubs can help reduce heating and cooling bills by providing summer shade and protection from winter winds. A hedge can add privacy, and plants of various shapes or sizes can be used to screen an ugly view. For wildlife, plants provide shelter, nesting sites and a variety of food such as fruits that

would otherwise be unavailable. Proper selection of plants can fill family needs and at the same time provide a haven for wildlife.

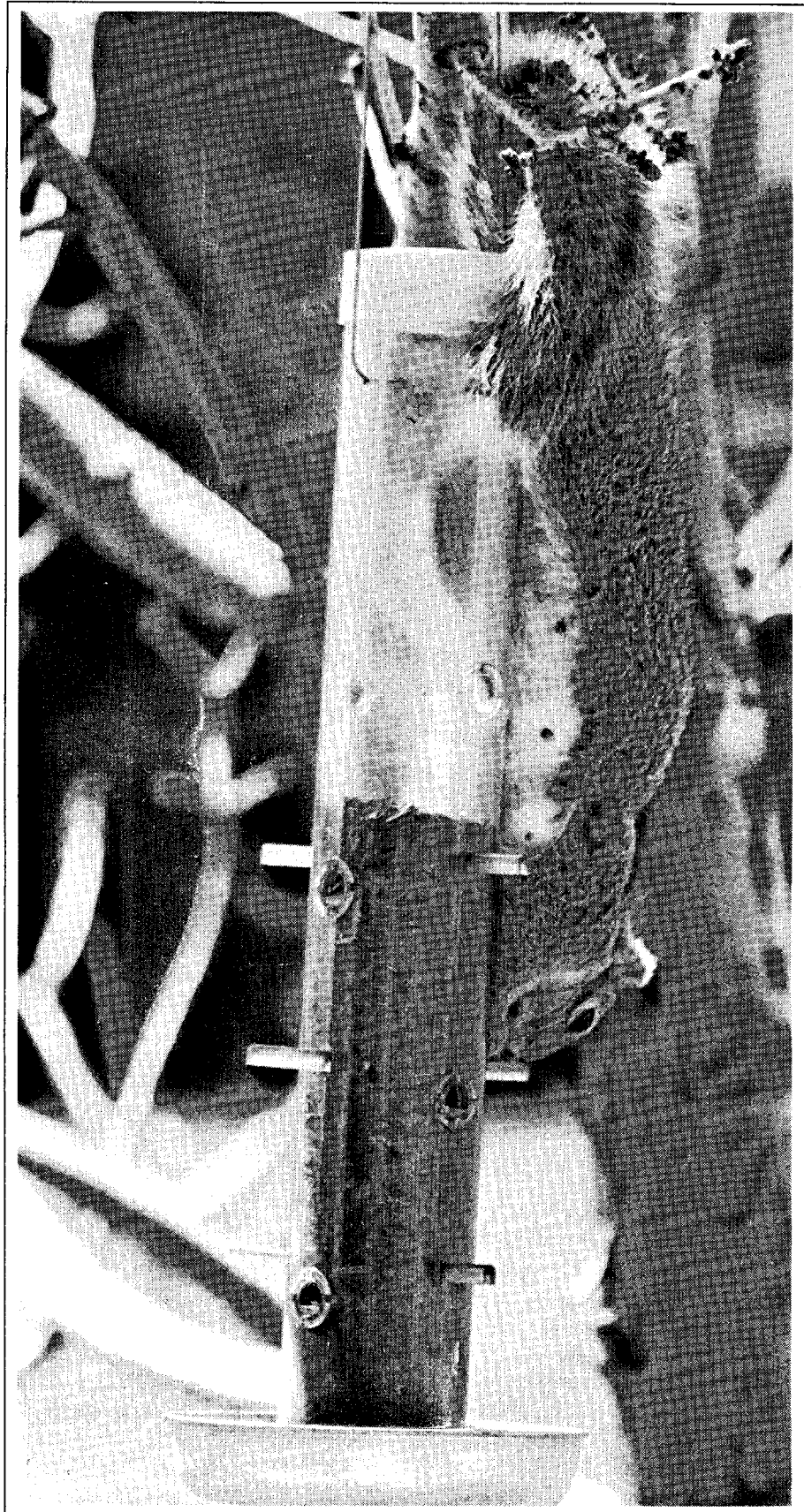
How to Start

First, a goal. Take into consideration the size of your backyard, what plants are already present and what wildlife you would like. Then, a plan. Plantings will continue to grow - consider the plant size, shape, spacing, etc. Outlining the yard on paper and then sketching in plans can help; drawing on graph paper helps with dimensions.

Next, select plants that area adapted to your area from the list found in the woodlands section of this supplement. It is best to select shrubs and trees that offer both food and cover. For this reason "seedless" tree varieties should be avoided since they offer no food.

What to expect

The kinds of wildlife that visit the backyard will vary depending on its location and size, stage of habitat development and other factors. But, the more diversity found in your backyard habitat plan, the greater variety of wildlife you will attract to your door.



There is no such thing as a squirrel-proof bird feeder.

North Dakota Wildlife Conservation Programs

The purpose of this segment is to dispel some of the current myths that agriculture and wildlife cannot coexist. This section identifies the public and private agencies and/or organizations that provide technical as well as financial assistance to landowners to implement sound conservation practices that may benefit both agriculture and wildlife.

There are too many programs to list individually here, but there is a booklet entitled "North Dakota Wildlife Conservation Programs," that contains a summary of information on most available programs. You can receive a free copy of this booklet at your local county extension office.

Following are the practices discussed in this special section, and a listing of the agencies that have cost-share or technical assistance programs to help with those practices.

Developing Wildlife Habitat

Local ASCS county office

Local SCS field office

North Dakota Game and Fish Department, Habitat Division, 221-6300

U.S. Fish and Wildlife Service, 255-4403

North Dakota Department of Agriculture, 224-2232

Dakota Wildlife Trust, P.O. Box 572, Valley City, ND 58072

Pheasants Forever, Oahe Chapter, 2510 No. 8th St., Bismarck, ND 58501

Wetland Restoration

Local ASCS county office

Local SCS field office

U.S. Fish and Wildlife Service, 255-4403

N.D. Game and Fish Department, Habitat Division, 221-6300

N.D. Water Users, 223-4615

N.D. Department of Agriculture, 224-2232

Dakota Wildlife Trust, P.O. Box 572, Valley City, ND 58072

Conserving Wildlife Habitat, Tree Planting, Grazing System Management

Local ASCS county office

Local SCS field office

N.D. Game and Fish Department, Habitat Division, 221-6300

U.S. Fish and Wildlife Service, 255-4403

Local county extension agent

N.D. State Forest Service, 228-2277, Ext. 22

Summary

The goal of this special section is to provide landowners with an in-hand guide to conservation practices and programs that will benefit wildlife. With the advent of the Conservation Reserve Program, the opportunity exists to greatly improve wildlife numbers and habitat. This section will give landowners who are willing to consider wildlife in their operation, a place to get started.

Helping You Put Knowledge To Work

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